



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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<p>(21) International Application Number: PCT/EP97/03637</p> <p>(22) International Filing Date: 4 July 1997 (04.07.97)</p> <p>(30) Priority Data:</p> <table> <tr> <td>96305497.8</td> <td>26 July 1996 (26.07.96)</td> <td>EP</td> </tr> <tr> <td colspan="2">(34) Countries for which the regional or international application was filed:</td> <td>AT et al.</td> </tr> </table> <table> <tr> <td>96305499.4</td> <td>26 July 1996 (26.07.96)</td> <td>EP</td> </tr> <tr> <td colspan="2">(34) Countries for which the regional or international application was filed:</td> <td>AT et al.</td> </tr> </table> <table> <tr> <td>96308362.1</td> <td>19 November 1996 (19.11.96)</td> <td>EP</td> </tr> <tr> <td colspan="2">(34) Countries for which the regional or international application was filed:</td> <td>AT et al.</td> </tr> </table> <table> <tr> <td>97301719.7</td> <td>14 March 1997 (14.03.97)</td> <td>EP</td> </tr> <tr> <td colspan="2">(34) Countries for which the regional or international application was filed:</td> <td>AT et al.</td> </tr> </table> <table> <tr> <td>97301733.8</td> <td>14 March 1997 (14.03.97)</td> <td>EP</td> </tr> <tr> <td colspan="2">(34) Countries for which the regional or international application was filed:</td> <td>AT et al.</td> </tr> </table> <p>(71) Applicant (for all designated States except AU BB CA GB IE KE LK LS MN MW NZ SD SG SZ TT UG): UNILEVER N.V. [NL/NL]; Weena 455, NL-3013 AL Rotterdam (NL).</p>		96305497.8	26 July 1996 (26.07.96)	EP	(34) Countries for which the regional or international application was filed:		AT et al.	96305499.4	26 July 1996 (26.07.96)	EP	(34) Countries for which the regional or international application was filed:		AT et al.	96308362.1	19 November 1996 (19.11.96)	EP	(34) Countries for which the regional or international application was filed:		AT et al.	97301719.7	14 March 1997 (14.03.97)	EP	(34) Countries for which the regional or international application was filed:		AT et al.	97301733.8	14 March 1997 (14.03.97)	EP	(34) Countries for which the regional or international application was filed:		AT et al.	<p>(71) Applicant (for AU BB CA GB IE KE LK LS MN MW NZ SD SG SZ TT UG only): UNILEVER PLC [GB/GB]; Unilever House, Blackfriars, London EC4P 4BQ (GB).</p> <p>(72) Inventors: BYASS, Louise, Jane; The University of York, Dept. of Biology, The Plant Laboratory, Heslington, York YO1 5YW (GB). DARLING, Donald, Frank; Unilever Research Colworth Lab., Colworth House, Sharnbrook MK44 1LQ (GB). DOUCET, Charlotte, Juliette; The University of York, Dept. of Biology, The Plant Laboratory, Heslington, York YO1 5YW (GB). FENN, Richard, Anthony; Unilever Research Colworth Lab., Colworth House, Sharnbrook MK44 1LQ (GB). LILLFORD, Peter, John; Unilever Research Colworth Lab., Colworth House, Sharnbrook MK44 1LQ (GB). McARTHUR, Andrew, John; Unilever Research Colworth Lab., Colworth House, Sharnbrook MK44 1LQ (GB). NEEDHAM, David; Unilever Research Colworth Lab., Colworth House, Sharnbrook MK44 1LQ (GB). SIDEBOTTOM, Christopher; Unilever Research Colworth Lab., Colworth House, Sharnbrook MK44 1LQ (GB). SMALLWOOD, Keith; Unilever Research Colworth Lab., Colworth House, Sharnbrook MK44 1LQ (GB). SMALLWOOD, Margaret, Felicia; University of York, Dept. of Biology, The Plant Laboratory, Heslington, York YO1 5YW (GB).</p> <p>(74) Agent: UNILEVER N.V.; Patent Division, P.O. Box 137, NL-3130 AC Vlaardingen (NL).</p> <p>(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, ARIPO patent (GH, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).</p> <p>Published <i>With international search report.</i></p> <p>(88) Date of publication of the international search report: 23 April 1998 23.04.98)</p>
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<p>(54) Title: FROZEN CONFECTIONERY PRODUCTS</p> <p>(57) Abstract</p> <p>Plant anti-freeze proteins can advantageously be incorporated into frozen confectionery products, provided they have the capability of limiting the growth of ice crystals.</p>																																

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INTERNATIONAL SEARCH REPORT

Inte onal Application No
PCT/EP 97/03637

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 A23G9/02

According to International Patent Classification(IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 A23G

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 92 22581 A (UNIVERSITY OF WATERLOO) 23 December 1992 see page 14, line 18 - line 28 see page 9, line 6 - line 11; claims 1,3,7,9,14 ---	1,2,5,7, 9
A	R. E. FEENEY ET AL: "antifreeze proteins: properties, mechanism of action and possible applications" FOOD TECHNOLOGY, vol. 47, no. 1, 1993, CHICAGO, pages 82-89, XP002022179 see the whole document ---	1
A	WO 94 03617 A (UNILEVER) 17 February 1994 see the whole document ---	1 -/-

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Date of the actual completion of the international search 9 February 1998	Date of mailing of the international search report 13/02/1998
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl Fax: (+31-70) 340-3016	Authorized officer Guyon, R

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P ,A	WO 97 02343 A (UNILEVER) 23 January 1997 see the whole document ----	1
P ,A	WO 96 39878 A (THE PILLSBURY COMP.) 19 December 1996 see the whole document ----	1,2
A	ARBUCKLE W S: "THE FREEZING PROCESS" 1987 . ICE CREAM, PAGE(S) 232 - 238 , ARBUCKLE W S XP002022180 ----	1
A	US 4 565 643 A (SOICHI ARAI ET AL.) 21 January 1986 ----	
A	WO 95 20883 A (UNILEVER) 10 August 1995 -----	

2

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/EP 97/03637

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
WO 9222581 A	23-12-92	AU 1907192 A CA 2110510 A EP 0589928 A		12-01-93 23-12-92 06-04-94
WO 9403617 A	17-02-94	AU 4571993 A		03-03-94
WO 9702343 A	23-01-97	AU 6519096 A		05-02-97
WO 9639878 A	19-12-96	US 5620732 A AU 5790496 A CA 2195950 A EP 0783254 A		15-04-97 30-12-96 19-12-96 16-07-97
US 4565643 A	21-01-86	JP 1769621 C JP 4058516 B JP 60226588 A CA 1218260 A		30-06-93 17-09-92 11-11-85 24-02-87
WO 9520883 A	10-08-95	AT 147588 T AU 681008 B AU 1664495 A CA 2182703 A CN 1140394 A CZ 9602273 A DE 69500136 D DE 69500136 T EP 0710074 A ES 2085847 T FI 963037 A HK 74397 A HU 74498 A JP 9506780 T NO 963243 A NZ 279495 A PL 315787 A SK 100796 A ZA 9500746 A		15-02-97 14-08-97 21-08-95 10-08-95 15-01-97 15-01-97 27-02-97 07-05-97 08-05-96 16-06-96 01-08-96 13-06-97 28-01-97 08-07-97 02-08-96 24-02-97 09-12-96 04-12-96 31-07-96